

**SERVOACTUATOR HAVING  
MOTOR-DRIVEN ACTUATOR WITH  
HYDRAULIC FORCE AMPLIFICATION**

Abstract

5           A servoactuator (20) is operatively arranged to control the movement of an output member (21) in either of two directions in response to a command signal. The servoactuator includes an electric motor (25) having a rotatable output shaft (26); a motor controller (25) arranged to provide a drive current to the motor for controllably rotating the output shaft; a first transmission mechanism (34) operatively arranged to displace the  
10   output member in either direction at a nominal first ratio with respect to the motor output shaft; a hydrostatic second transmission mechanism (35) operatively arranged to displace the output member in either direction at a nominal second ratio with respect to the motor output shaft; a transfer mechanism (36) operatively arranged to selectively couple the motor output shaft to the output member either through the first transmission mechanism  
15   to impart a high-speed low-force drive to the output member, or through the second transmission mechanism to impart a low-speed high-force drive to the output member; at least one feedback transducer (29, 32) capable of measuring one of the force, displacement or velocity of the output member; and a servo control loop (30, 33) closed about the motor, controller, transmission mechanisms, transfer mechanism, feedback transducer  
20   and output member for selectively controlling at least one of the position, velocity or force of the output member as a function of the command signal.